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## Does higher education cause political participation? Evidence from a regression discontinuity design

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*Does Higher Education Cause Political  
Participation?: Evidence From a Regression  
Discontinuity Design*

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DOES HIGHER EDUCATION CAUSE POLITICAL PARTICIPATION?:  
EVIDENCE FROM A REGRESSION DISCONTINUITY DESIGN

ALEX SOLIS

# Does Higher Education Cause Political Participation?: Evidence From a Regression Discontinuity Design\*

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March 1, 2012

## Abstract

Education has been considered by political economy and political science literature one of the most important factors explaining political participation: voter turnout, civic engagement, political knowledge, and democratic attitudes. However, only few papers have explored the causal link with contradictory findings. In this paper, I use the eligibility criteria for two loan programs in Chile, that produce an exogenous variation on higher education enrollment, to test the causal effects of higher education and college on two measures of political participation: voter registration and affiliation with a political party. Using administrative individual data from the universe of voters, I find evidence that the relationship is statistically zero. Moreover, the relationship is zero when the data is analyzed by income, sex or by different background measures. A survey from a representative sample of the population allows a RD analysis that indicates that higher education do not cause changes in attitudes towards democracy, political knowledge, participation in demonstrations or in civic organizations, but it does cause overreporting on voting registration.

JEL Codes: D7, I21, I25.

Keywords: political participation, college, higher education, voting registration, overreporting.

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# 1 Introduction

Understanding the relationship between education and political participation is one of the most important questions on political economics and political science (Campante and Chor, 2012). One of the most well documented findings is the strong and positive relationship between schooling and political participation: voter turnout, civic engagement, political knowledge, and democratic attitudes (Campbell, Converse, Miller and Stokes (1960); Wolfinger and Rosenstone (1980); Nie, Junn and Stehlik-Barry (1996); Schlozman (2002); Hillygus (2005); among others), which is sometimes considered one of the major contributions of political science to the general body of knowledge (Schlozman, 2002). The importance of this relationship has been used as an argument to justify government intervention in the market of education (Hanushek, 2002), and has been considered fundamental to the preservation of democracy. However, only recently, few papers have explored the causal channel with contradictory findings. On the one hand, Dee (2004) and Milligan, Moretti and Oreopoulos (2004) using instrumental variables strategies,<sup>1</sup> and Sondheimer and Green (2010) analyzing 3 educational experiments, find a positive effect for the United States.<sup>2</sup> On the other hand, Tenn (2007), Kam and Palmer (2008), Berinsky and Lenz (2010), find no effect using different strategies with US data, while Borgonovi, d’Hombres, and Hoskins (2010), Pelkonen (2010), Siedler (2010) and Chevalier and Doyle (2012) provide more evidence of no effect using the same instrumental variables with data from European countries.

Despite the very well documented positive correlation, education may not cause political participation by at least two forms of endogeneity. First, third variables may induce individuals to self-select into higher education and into political activities simultaneously (i.e. personality traits, cognitive ability, family background characteristics, etc.). Because these variables are in general unobserved, education acts as a proxy (Kam and Palmer, 2008). Secondly, it may be that high levels of political participation cause a high educational attainment (reverse causality). More politically active groups or communities have the tools to demand for their rights and to make their politicians accountable, therefore they demand for policies in favor of more and better education.

In this paper, I use a regression discontinuity design, to deal with endogeneity. Students in

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<sup>1</sup>Milligan et al (2004) analyzed the same instruments for the United States and the United Kingdom, but they find a non-statistically significant effect for the UK.

<sup>2</sup>In Sondheimer and Green (2010), the relationship is significant for 1 of the 3 experiments

Chile became eligible for higher education loans on any type of institution when they score more than a given threshold in the national college admission test. Those below the cutoff are only eligible for loans in technical institutions. This rule produces a discontinuity in the proportion of students that enroll in higher education (enrollment in any tertiary vocational programs or college) and particularly in college (see Solis, 2012). Since scores are continuous around the threshold, the loan eligibility criteria shows that enrollment in higher education is as good as randomly assigned (Lee and Lemieux, 2010), and can be used as an exogenous source of higher education and college enrollment to test the effect of education on political participation.

Moreover, this paper benefits from a rich and detailed data set from almost the universe of students that graduate from high school in the country, and take the college admission test. Combining these data with electorate administrative records, from electoral office on voting registration and political party affiliation (2 parties), allows me to deal with common problems such as sample biases and misreported political participation. Moreover, it allows examining the heterogeneity on the relationship and the different conditions mentioned in theory, through which education can affect political participation.

I find that there is a positive and strong correlation between higher education and political participation, nonetheless the relationship is not causal. I find that despite the exogenous changes in college and in higher education enrollment, there is no effect on voting registration or on party affiliation. The results are highly robust and stable to functional specification and the inclusion of a rich set of covariates. Moreover, I find that the relationship does not appear when the population is grouped by income level, sex or family background characteristics.

The correlations found with the administrative data are much lower (but highly significant) than those calculated with publicly available political surveys, reflecting the presence of behavioral biases in the data from surveys. To find out what type of selection or bias may drive this discrepancies, I perform a web survey to the same students affected by the loan eligibility criteria, to elicit self-reported participation on elections, political party affiliation, attitudes (towards democracy in particular), political knowledge, and other measures of political participation. I find that education does not cause changes in any of the measures of political participation (political knowledge, other forms of political participation, nor in attitudes towards democracy).

However, I find that crossing the threshold implies an increase of 2 percentage points in the

likelihood of overreporting voting registration. College and higher education students increase their likelihood of overreporting in 10 and 15 percentage respectively (robust and stable to functional specification and the inclusion of covariates).

The paper is organized as follow, in section 2, I describe the literature, the data used in the paper and the characteristics of the Chilean electoral system. Section 3 gives the econometric strategy. Section 4 presents the empirical results and section 6 concludes.

## 2 Background

### 2.1 Literature review

The importance of education on citizenship and democracy has been discussed perhaps since Aristotle (Lipset, 1959) as a way to provide the tools to participate intelligently in the political system avoiding demagogy. More recently, the relationship has been examined from the macro and micro point of views. From a cross country perspective, education it is seen as a necessary condition for democracy because enables prosperity and increases wealth and growth (Lipset (1959), Barro (1999), Glaeser et al (2004), among others). Moreover, education, as main source of human capital accumulation, is the key determinant of the quality of institutions (Glaeser et al (2004)). These conclusions have been highly controversial, Acemoglu et al (2005), argue that most of the evidence uses cross sectional data that potentially gives biased estimates due to the presence of omitted variables. They show that after including country fixed effects the relationship is statistically zero. However, Bobba & Coviello (2007) and Catelló-Climent (2007) restates the causal relationship, re-estimating the effect using a “system” GMM that performs better than the “difference” GMM used in Acemoglu (2005) when the explanatory variables are highly persistent and measured with error.

On the microeconomic perspective, the link between education and political participation is considered the strongest relationship in political science (Campbell, Converse, Miller and Stokes (1960); Wolfinger and Rosenstone (1980); Nie, Junn and Stehlik-Barry (1996); Schlozman (2002)) and the best individual level predictor of political participation (Putnam, 1995). However, only recently some studies have explored the causal relationship between education and political participation.

Milligan, Moretti and Oreopoulos (2004) use compulsory schooling laws to instrument education attainment, finding that the relationship between graduating from high school and voting is strong and positive in the US, but not significantly different from zero in the UK. They conclude that education allows Americans go through the barriers of registration, while in the UK registration is highly assisted by electoral officials, concluding that education is key to allow political participation where participation required skills and knowledge. Moreover, they find in both countries that education affects citizens' interest on politics. Dee (2004) uses distance to college and exposure to child labor laws as an instrument for college education and years of education to explore the effects on voting, participation on groups, attitudes toward democracy and civic awareness. He finds that the relationship is positive and significant for both types of education measures: college and secondary on all the variables studied.

Nevertheless, Tenn (2007) suggests that the instruments used in Milligan et al (2004) and Dee (2004) may still be correlated with omitted variables. He argues that these instruments vary only by age, year, or geographic location, and therefore is impossible to identify the effects after the inclusion of a complete set of interactions of these covariates, which are key explanatory variables of political participation.<sup>3</sup> Tenn (2007), uses a different approach exploiting differences in years of education for some young students that, despite having the same age, are in different levels of the educational cycle. He finds that one more years of education have very little effect on voter turnout, but it does have an effect on voter registration. Kam and Palmer (2008) use a propensity score matching method to address the selection on education. They find that after including preadult outcomes the relationship between higher education and political participation disappears.<sup>4</sup> However, this paper is highly criticized by Henderson and Chatfield (2011) who argue that it presents problems in the matching method. After applying a genetic matching approach the relationship becomes statistically significant while the balance among covariates improves.

Sondheimer and Green (2001) uses two randomized experiments and one quasi experiment that produces exogenous variation on high school graduation to test the effects in turn out. They find a positive effect in the experiment STAR, and positive but non-significant effects under the

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<sup>3</sup>Mazumber (2007) also criticizes the use of compulsory schooling laws and child labor laws as instruments for education (in the context of health), since the inclusion of the time-state fixed effects erase the coefficients.

<sup>4</sup>They define participation broadly as an additive index involving voting in 1972, attending campaigns meeting or rallies, displaying a campaign symbol, working on a campaign, donating to a campaign, contacting a public official, participating in a demonstration, or working with others to solve a local issue.



Perry preschool experiment and the “I have a dream” quasi experiment. They attribute the non-significance to the small sample size.

Finally, Friedman, Kremer, Miguel and Thornton (2011) use a randomly assigned scholarship program (for girls) in Kenya that increase secondary attainment. They conclude that educated students are less likely to accept domestic violence, the legitimacy of political authorities, and they have higher political knowledge. Nevertheless, they show that this empowerment through education does not translate into more participation in politics and into perceived political efficacy. They conclude that their findings are consistent with the view that education increases autonomy and empowerment, on opposition to the modernization theory. They also argue that these findings are puzzling and consistent with reverse causality, because to receive more education, students need to be willing to accept authority in the first place, and after that, with the tools given by education, they are able to challenge authority.

The two main hypotheses on how education affects participation are the cognitive ability (or civic education) hypothesis and the social network hypothesis. The first states that education prepares more educated individuals to understand how the political process works. Education gives to individuals the necessary skills and knowledge to get involved (Rosenstone and Hansen, 1993) or to reduce the cost of participation (Wolfinger and Rosenstone, 1980). Moreover, college life is rich in activities that give individuals the opportunity to understand better the importance of politics and highlight the values of democracy, allowing the emergence of tastes for participation (Galston, 2001). Nevertheless, not all types of higher education may provide with these skills and knowledge (that allow a better language usage or a better understanding of the political process). This hypothesis contrast with the fact that education attainment has increased largely in the last decades over the world while voting turnout have decrease steadily over the same period (Brody, 1978)

The social network hypothesis states that education is a good predictor of the social position of an individual, and as a consequence more educated individuals would be closer to decision spheres were they can benefit directly (Nie et al (1996)). Moreover, peers in social networks provide individuals with political information, therefore more informed and more educated peers may reduce the cost of participation and boost the interest and taste for politics (Lochner, 2011).

Social networks can also impute social pressure to engage political behavior and may be the target of politicians who try to maximize the outcome of their information campaigns (Hillygus, 2005).

## 2.2 Data

The data used in this paper has unique characteristics to test the relationships of interest. The first part corresponds to administrative data on higher education enrollment matched with official information on registration to vote and political party affiliation at the individual level over the universe of students that take the college admission test (Prueba de seleccion universitaria, PSU hereafter). Therefore is free of self-reporting bias or measuring error.

The second part considers self-reported information for a representative sample of the previous population related to participation (on voting, political parties, demonstrations, engagement with civic organizations), political knowledge (about the electoral system, people from the government, congress authorities, and elected congressmen in their own districts), and democracy attitudes. This information is combined with the previous one to use the same regression discontinuity strategy.

The PSU test is taken for almost all high school graduates each year.<sup>5</sup> Students that want to continue their education, take the test because it is used as a mechanism to rank students in most higher education institutions in the country, and it also serves as an assignment mechanism for loans and scholarships given by public funds in the country representing 95% of all financial benefits in the country. Students that do not want to follow tertiary education also take the test (most of the time), because it is sometimes requested in blue collar jobs as high school graduation certification. Moreover, it is free for all students in public and voucher schools that apply for a waiver and is written few days after the end of the last year of high school.

After the PSU test results are released students may participate in a centralized process to apply for traditional universities,<sup>6</sup> may apply for enrollment in private universities or enrolled directly in vocational institutions. After the enrollment process end all the institution are mandated to inform the Ministry of Education about enrollment, and the ministry assign loans, grants and scholarships to the students previously registered for, based in eligibility rules that consider PSU

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<sup>5</sup>96% of all high school graduates register to take this exam each year, which is about 250 thousand students per year (in this paper 2007, 2008 and 2009).

<sup>6</sup>Covering more then 50% of the college education.

score cutoffs and family income quintiles determined by the tax authority.

The data on higher education enrollment considers these 3 sources of information. First, the universe of individuals who register to take the PSU test, report a rich set of demographics characteristics, self-reported family income, parent education, household size, place of residency, which is combined with administrative records such as sex, birth date, graduating high school, high school GPA, high school graduating year, application to traditional university programs, etc.

These data is combined, using the national ID (RUT), with the data on higher education enrollment from the Ministry of Education which identifies the program and institution each student enrolled in, whether the student applied to loans and scholarships, in which case whether a student is eligible for loans and scholarships, and the income quintile reported by the national tax authority.

Finally, the information is matched using the national ID with official records on registration to vote and political party affiliation for 2 political parties, from the Electoral Commission (Servicio Electoral de Chile). The electoral data corresponds to the registry immediately before the last presidential election of December 2009 and the ballotage of January of 2010.

### **2.3 Electoral System**

In the years considered, individuals are entitled to vote after they turn 18 years old and they voluntarily register in the electoral office. After registration, voting is mandatory unless the individual is 200 kilometers away from her poll, sick, or has lost her national id card, in which case the individual needs to hereby certify at a police station to avoid a fine equivalent to 3 UTM<sup>7</sup> or 200 USD.

In the presidential election of 2009, 71% of the voting-age population was registered to vote, with turnout of 88% among individuals registered,<sup>8</sup> which implies that 63% of the population in age to vote turned out. As can be seen in figure 1, Chile is a country with average turnout, very similar to the US, and very similar in terms of population in higher education with European countries like France and Austria.<sup>9</sup>

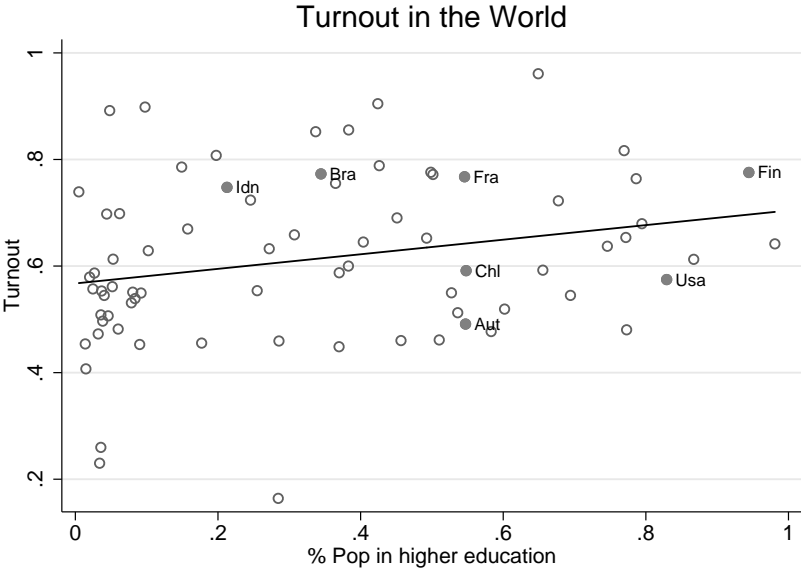
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<sup>7</sup>UTM is a tax measure that has a value in Chilean pesos that changes every month by inflation.

<sup>8</sup>Using projected population from Census 2002 and actual registration data from electoral commission.

<sup>9</sup>Turnout data comes from the International Institute for Democracy and Electoral Assistance (IDEA) and population on tertiary education from UNESCO Institute of Statistic Data Centre.

Figure 1: Relationship between turnout and participation on higher education around the world



Note: Turnout data from the International Institute for Democracy and Electoral Assistance (IDEA) and population on tertiary education from UNESCO Institute of Statistic Data Centre.

All elections days are public holidays and the poll stations are normally held in school and stadiums well known by the electorate. Those registered to vote are required to participate in presidential elections, elections for congress (Senators and member of congress or representatives, *diputados* in Spanish), and in municipality elections to vote for mayors and city councils.<sup>10</sup> The presidential elections occurs every 4 years, as well as the elections for representatives, while the senate elections happens every 8 years. All these elections are combined to happen in the same day. Municipality elections to elect mayor and its council are carried out every 4 years and are held 1 year before the presidential elections.

The second dependent variable is registration on a political party which is, obviously, voluntary. There are several political parties, but only 5 of them receive more than 5% of the votes each, receiving 78% of all votes. The 2 political parties here considered present candidates in the election that represent 24% of all votes in members of congress elections, and represent 31% of the votes received among the 5 biggest parties. The Christian Democracy Party is the third biggest party receiving 14% of all votes while the Socialist Party is fifth receiving 10% of the votes. Both participated in the coalition that governed since 1990 to 2010.

<sup>10</sup>The municipality is the lowest level of administration in the country. The country is divided in 15 regions, 54 provinces, and 348 municipalities. Regions and province governors are chosen by the president.

### 3 Identification Strategy

The correlation between education and political participation may not indicate causality by a number of factors: the first, and more argued one, is the existence of third variables that explain both variables simultaneously. Kam and Palmer (2008) argued that education is simply a proxy of preadult experiences and dispositions most of the time related to family background, such as values and personality, or even cognitive ability, that determine a high interest in politics and high preferences for education. Therefore the high correlation found in the literature is capturing the fact that education is simply a proxy for such characteristics. Even if education is truly causing participation, these non-observed characteristics would upwardly bias the estimations since they are correlated with both.

Secondly, it may be that high levels of political participation are causing a higher level of education attainment (reverse causality). More politically active groups or communities have the power to demand for policies in favor of more and better education. People from nations with strong democracies may have the power to implement an educational system that preserves democracy allowing social mobility and economic equity.

I address these problems, using a natural experiment that produces exogenous variation in education. Students who score above a certain threshold on the PSU admission test have access to tuition loans for any program on accredited institutions, while the group of students below the cutoff have access to loans for vocational institution only. As shown in Solis (2012), being above the cutoff implies an increase in the probability of going to college but also implies an increase in the probability of enrolling in higher education in general (any college program or tertiary vocational schools). Under the assumption that every individual score density is continuous, the probability of being on either side of the threshold is the same, and therefore around the eligibility cutoff access to higher education is as good as randomly assigned (Lee and Lemieux, 2010). This element enables a regression discontinuity design that addresses the endogeneity problems, and allows for an unbiased estimate of the causal effect of higher education on political participation.

Loans are given by two different financial programs with barely the same requirements, the State Guaranteed Loan program (Credito con aval del Estado) and the traditional universities loan program (Credito Solidario para universidades tradicionales). To have access to the first

loan to enroll in any accredited higher education institution (College and technical or vocational institutions) students need to satisfy 3 requirements: have filled the economic status verification form (Formulario Único de Acreditación Socioeconómica, FUAS) before taking the PSU test, being classified in the 4 poorest income quintile by the tax authority and scoring more than 475 points on average in language and mathematics of the PSU admission tests. The second loan program asks the same requirements but is only valid for students enrolling in traditional universities.<sup>11</sup> Nonetheless, eligible students (that filled the verification form and were classified in one of the poorest 4 income quintiles) who scored less than the cutoff could get the State guaranteed loan if and only if they enroll in a program from tertiary vocational institution.

Because some students below the cutoff enrolled in college despite the fact of not receiving financial support, the rate of enrollment is not zero below the cutoff, but jumps discontinuously on it. Students below the cutoff substitute college for vocational programs where they have access to loans, but also there is more students enrolling in higher education above the cutoff than below. I use the cutoff as an instrument for both measures of higher education, in a fuzzy regression discontinuity design. In the first stage I estimated the relationship between higher education or college with respect to the cutoff, controlling for the influence of the running variable using a flexible function for both sides of the eligibility threshold

$$Education_i = \alpha_1 + \beta_1 \cdot 1(T_i \geq \tau) + f(T_i) + X_i \cdot \delta_1 + \nu_i \quad (1)$$

and in the second stage I estimate the the relationship of interest

$$PolPart_i = \alpha_2 + \beta_2 \cdot Education_i + f(T_i) \cdot X_i \cdot \delta_2 + \eta_i \quad (2)$$

These loans schemes produces a significant discontinuity in the enrollment rate for higher education and for college. Panel A on Table 2 shows the RD estimation for college enrollment. The different columns show different specifications from linear regression using a bandwidth of 44 points to polynomials splines of 2nd, 3rd and 4th order using the full sample. The results are

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<sup>11</sup>Traditional university is the term used to indicate one of the 25 oldest universities in the country that existed before the educational reform of 1981. Among the 25 traditional universities there are private and publicly funded universities. The universities that are not part of this group are called “private” universities, and are mainly for profit universities. Students in private universities did not have access to loans funded by the government before the inclusion on the State Guaranteed Loan in 2006.

stable and robust to specification and to the inclusion of a rich set of covariates.

Table 1: Balance of covariates for all the students, and conditional on enrolling into higher education and college. Using 2 methods: a 4th order polynomial and a linear specification.

	All		Higher Education		College	
	4th poly	linear	4th poly	linear	4th poly	linear
1(Female)	0.01 (0.01)	0.00 (0.01)	0.02 (0.01)*	0.01 (0.01)	0.02 (0.02)	0.02 (0.01)
Income quintile	0.03 (0.02)*	0.02 (0.01)	-0.01 (0.02)	-0.03 (0.02)	-0.21 (0.04)***	-0.21 (0.03)***
Self reported Income	0.00 (0.01)	0.00 (0.01)	-0.02 (0.01)*	-0.02 (0.01)**	-0.11 (0.02)***	-0.11 (0.02)***
Mother Education	0.02 (0.04)	0.01 (0.03)	0.01 (0.05)	-0.01 (0.05)	-0.24 (0.08)***	-0.26 (0.07)***
Father Education	0.06 (0.04)	0.02 (0.04)	0.02 (0.06)	-0.03 (0.06)	-0.24 (0.1)**	-0.33 (0.09)***
Household size	-0.01 (0.03)	-0.02 (0.03)	-0.01 (0.04)	-0.01 (0.03)	0.07 (0.06)	0.07 (0.05)
Age	0.03 (0.02)**	0.02 (0.02)	0.06 (0.02)**	0.04 (0.02)**	0.00 (0.04)	-0.01 (0.03)
1(married)	0.001 (0.002)	-0.001 (0.002)	0.002 (0.003)	0.000 (0.003)	0.01 (0.01)	0.00 (0)
1(work)	0.005 (0.005)	0.004 (0.004)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
High School Type	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.01)*	0.06 (0.02)***	0.08 (0.02)***
High School GPA	1.10 (1.67)	-0.77 (1.54)	2.62 (2.27)	1.19 (2.07)	12.16 (3.85)***	12.77 (3.34)***
Observations	233,898	79,359	150,246	45,916	102,597	24,330

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%, \*: p-value<10%. The 4th order polynomial is on the running variable PSU score. the linear specification is restricted to the optimal bandwidth of Imbens and Kalyanaraman (2009) of 44 PSU points around the cutoff.

The probability of going to college jumps 18 percentage points for those who barely score 475 or more. This represent an increase of 82 percent with respect to the baseline enrollment rate of those who barely score below the cutoff (enrollment of 22 percent). On Panel B I show the RD estimation for higher education, which included enrollment in college, but also in any vocational institution. The enrollment rate is also robust to specification and the inclusion of covariates and it shows that students above the cutoff enrolled 11 percentage points more often in higher

education than those who did not achieve the cutoff. This increment in the probability of enrolling in higher education represent an increase of 21% with respect to the baseline enrollment rate of those that score below 475.

One hypothesis used to explain the relationship between education and participation states that higher education equips individuals with better cognitive abilities; unfortunately, there is no measure of cognitive abilities for these students a few years after they enrolled in higher education, to test directly if education produces these political improvement skills. Instead, I will test this hypothesis comparing indirectly the groups of students who receive higher education as good as randomly, using the cutoff on the admission test as instrument for higher education, in a 2SLS framework. I will test the extensive margin comparing students who enroll into higher education as a consequence of being eligible to receive tuition loans. I

Nevertheless, it may be that not all types of higher education produce improvements in the relevant skills. Programs that teach civic or social sciences directly are more likely to produce highly participative students (Hillygis, 2005). According to that idea an exogenous variation in higher education broadly defined may not be enough to allow the identification of the effect. Therefore, I use a more strict measure of higher education: college education. I compare students that go to college as consequence of the financing programs around the cutoff.

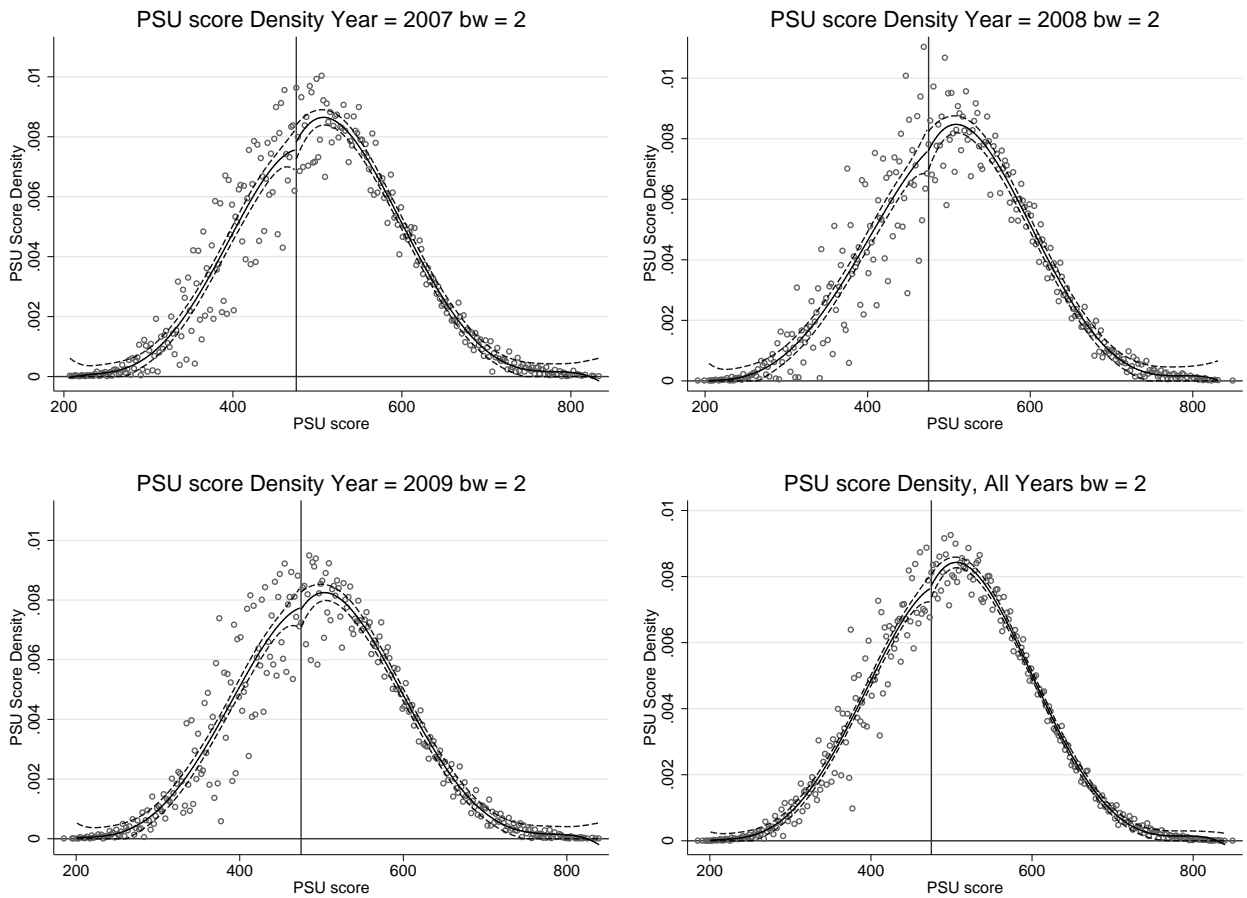
### **3.1 Conditions for a Valid RD**

To test the requirements for a valid regression discontinuity design, that ensure that students below and above the eligibility threshold are comparable in observables and unobservables, I perform 2 common tests: first, I show that students are not able to manipulate their score, and second, that there is no other baseline characteristic that changes at the cutoff.

Figure 2 shows the estimate of the density function of PSU scores using fourth order splines for the assignment variable at each side of the cutoff, plus 95% confidence intervals. Dots in Figure 2 correspond to the empirical density. The test shows that the density function is statistically continuous at the cutoff, which confirms that PSU scores are not subject to manipulation around the cutoff.



Figure 2: RD for PSU scores frequency distribution.



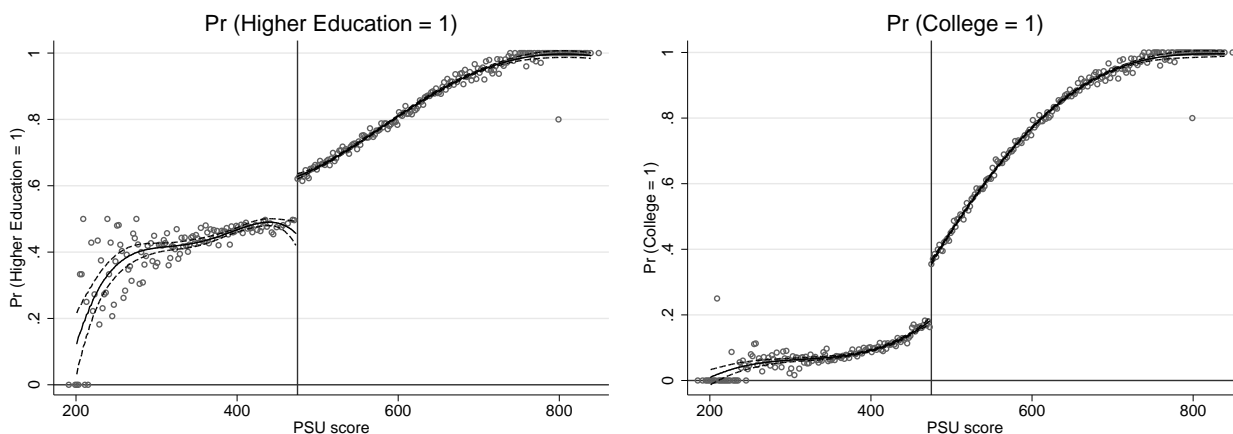
Note: Each dot represents the density of PSU scores in an interval of 2 points. The sample considers only students who satisfy all requirements to be eligible for college loans and take the PSU immediately after graduating from high school.

Table 1 shows the balance of baseline characteristics. The first 2 columns indicate the differences in each observable characteristic using 2 different approaches. The first column uses all the data and control with 4th order polynomials splines for the running variable (PSU score) on both sides of the cutoff. The second column reproduces the method used in Solis (2012) using a linear specification restricting the sample to all students within 44 PSU points of the cutoff, where 44 correspond to the optimal bandwidth calculated using the method of Imbens and Kalyanaraman (2012). Column (1) shows that only age and income quintile appear significantly different at 5% and 10% level of significance respectively, while in column (2) with the linear specification the balance appear for all variables. Columns (3) through (6) repeat this calculations for the individuals enrolled in higher education and college. In the last 2 columns is evident that students

that do not have access to these loans, enrolled only when they come from higher income families, with more educated parents, and therefore the change in enrollment come from the fact that these loans are key to finance their higher education.

Finally figure 3 shows that the loan programs created an exogenous change in college and higher education, which is going to be used as a first stage to explore the effects of college and higher education on political participation.

Figure 3: First Stages of the higher education measures.



Note: Each dot represents represents average enrollment in higher education (left) and college (right) in an interval of 2 points. The sample considers only students who satisfy all requirements to be eligible for college loans and take the PSU immediately after graduating from high school.

### 3.2 The Correlation for This Age Group

One concern with the data used in this paper is that consider individuals that graduated from high school between 2006 and 2008 and the most important measure of political participation, voting registration, is taken at the end of 2009. If education affects political participation in the long run, students that have been only 3, 2 and 1 year on higher education won't reflect any difference with respect to their counterfactual. Nevertheless, the advantage of analyzing individual behavior at this point of time is that there is no variation in income that confound the effects. This is one of the main problems faced when considering individuals at older ages, because education also affect individual's income, and therefore is impossible to disentangle the effects of education from of income.

To show how important this problem is, it is necessary to see if the correlation between ed-

ucation and political participation at this age exist. I show in Table 3 OLS regressions showing the correlation between three measures of higher education on the 2 outcomes of interest. The constant corresponds to the average participation for the population without higher education (registration to vote in the first 3 columns and political party affiliation in the following 3). The label “Education” indicates the increment in participation for different measures of higher education. For columns (1) and (4), “Education” correspond to any program in a higher educational institution either college or vocational. Column (1) shows that the average participation rate for individuals without higher education is 20%, but having 1 to 3 years of higher education increase the probability of registration to vote 5 percentage points (a relative increase of 25%). Columns (2) and (5) “Education” correspond to enrollment in college. Column (2) shows that the average participation rate for individuals without college is 18%, but having between 1 to 3 years of college increase this probability 10 percentage points (a relative increase of 50%). The same happened when “Education” correspond to number of years of higher education received by the students. Therefore this young population shows a strong and positive correlation between higher education and participation as expected.

To reinforce the idea that the correlation is present for this age group, Table 4 shows the same regressions using 2 publicly available surveys: first, the National Survey from Diego Portales university<sup>12</sup> from which I take self-reported registration to vote; and the national household survey CASEN<sup>13</sup> from which I obtain the question on political party participation. The sample is restricted to the group of the same age than the population in the previous table. From this table we can infer that the correlation between education and political participation is also present in these surveys, and second the relationship is much stronger, which may indicate the presence of some behavioral bias: participation selection and overreporting. While table 3 indicates that having any type of higher education increases registration to vote by 4.6 percentage points, the National survey form Diego Portales university in table 4 shows that higher education increases registration by 26.5 percentage points, about 5.8 times what indicate the official records. The

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<sup>12</sup>This survey is collected yearly and considers about 90 questions about political perceptions, discrimination opinions, etc. There are about 1300 interviews each year in 87 cities representing about 86% of the urban population of the country. The method used is the probabilistic by strata.

<sup>13</sup>CASEN is the main household survey in the country is implemented by the government to represent the population of the country. It mainly contain question about income, health, labor, education and household conditions. In 2009 they include the question about participating in political parties.

same happens for college enrolled. The relationship in surveys appear to be 4 times higher than the official records.

Table 2: First Stages for College and Higher Education. Specifications: Lineal (w=44) and polynomial of 4th grade.

	Lineal		Poly 2nd		Poly 3rd		Poly 4th	
Panel A: College								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(T \geq \tau)$	.175 (.006)***	.175 (.006)***	.179 (.004)***	.181 (.004)***	.170 (.005)***	.171 (.005)***	.170 (.006)***	.169 (.006)***
Const.	.224 (.007)***	-.015 (.014)	.213 (.004)***	.042 (.008)***	.239 (.008)***	.066 (.010)***	.243 (.014)***	.074 (.015)***
Obs.	79348	79254	235801	235552	235801	235552	235801	235552
$R^2$	.107	.117	.337	.342	.337	.342	.337	.342
Panel B: Higher Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(T \geq \tau)$	.114 (.007)***	.114 (.007)***	.112 (.005)***	.113 (.005)***	.119 (.006)***	.120 (.006)***	.114 (.007)***	.114 (.007)***
Const.	.521 (.010)***	.409 (.017)***	.512 (.006)***	.399 (.010)***	.516 (.012)***	.403 (.014)***	.526 (.021)***	.414 (.022)***
Obs.	79348	79254	235801	235552	235801	235552	235801	235552
$R^2$	.026	.03	.101	.105	.101	.105	.101	.105
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5, \*: p-value<10%. The 4th order polynomial is on the running variable PSU score. the linear specification is restricted to the optimal bandwidth of Imbens and Kalyanaraman (2009) of 44 PSU points around the cutoff.

One explanation may be that the individuals who did not register for the PSU test are registered to vote with a higher probability, which is implausible since 96% of all high school graduates register to take the admission test. According to the official records 529,216 individuals between 18 and 26 years old were registered to vote when the registry closed before the presidential election of 2009. Using the Census 2002 the population between 11 and 19 year old (which became between 18 and 26 in 2009) reach the 2,421,331 individuals, assuming that nobody dies in those 7 years the rate of registration would be 21.86%, which is very similar to the number obtained with the population taking the PSU.<sup>14</sup>

<sup>14</sup>For Political party affiliation we cannot make the same argument since I am using information only on 2 political parties.

Table 3: OLS relationship using all students that take the PSU between 2007 and 2009: registration to vote and Participation in political party

	Registration to Vote			Political Party Affiliation		
	Higher Educ.	College Educ.	Years of Educ.	Higher Educ.	College Educ.	Years of Educ.
	(1)	(2)	(3)	(4)	(5)	(6)
Const.	.199 (.001)***	.184 (.001)***	.181 (.001)***	.002 (.0001)***	.001 (.00009)***	.001 (.0001)***
Education	.046 (.002)***	.102 (.002)***	.018 (.0004)***	.0003 (.0001)**	.0007 (.0001)***	.0001 (.00003)***
Obs.	235801	235801	235801	235801	235801	235801
$R^2$	.003	.014	.009	1.00e-05	.00006	.00004

Note: Robust standard errors in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%

Table 4: OLS relationship using representative surveys CASEN 2009 and UDP Political Participation survey: Registration to vote and participation in political party for all surveyed individuals between 18 and 26 years old)

	Registration to Vote			Political Party Affiliation		
	Higher Educ.	College Educ.	Years of Educ.	Higher Educ.	College Educ.	Years of Educ.
	(1)	(2)	(3)	(4)	(5)	(6)
Const.	.121 (.036)***	.202 (.029)***	-.431 (.162)***	.0005 (.0002)**	.0008 (.0002)***	-.003 (.0009)***
Education	.265 (.056)***	.441 (.113)***	.052 (.013)***	.003 (.0004)***	.004 (.0005)***	.0004 (.00007)***
Survey	UDP	UDP	UDP	Casen	Casen	Casen
Obs.	212	212	212	36248	36248	36248
$R^2$	.096	.067	.076	.002	.001	.0008

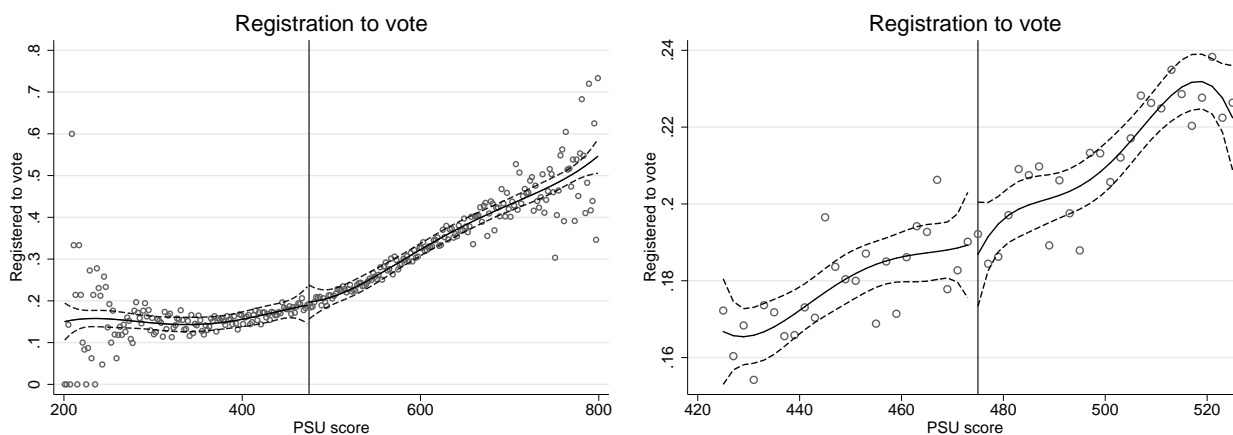
Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%

## 4 Results

### 4.1 Effects on Registration to Vote and Party Affiliation

The estimated relationship between education and political participation can be summarized with the reduced form. Figure 4 shows it in its graphical form: The relationship between registration to vote and the PSU score around the cutoff. The left graph shows this for the whole sample, while the figure on the right shows a zoom for a window of 100 point (1 standard deviation). Both figures show that the relationship is precisely zero.

Figure 4: Reduced Form. Registration to vote and in political party on scoring more than the cutoff ( $1(PSU_i > 475)$ )



Note: Each dot represents average registration to vote in intervals of 2 points. The left figure shows the whole PSU score support, while the right show a close up of 100 point around the eligibility cutoff. These figures consider only students who satisfy all requirements to be eligible for college loans and take the PSU immediately after graduating from high school.

Table 5 confirms the latter, it shows the reduced form between both measures of political participation on a dummy variable that takes the value of 1 if student  $i$  score more than the cutoff on the admission test (plus 4th order polynomials on both sides for the running variable that are not shown in the table). Panel A shows the results for registration to vote and panel B shows the effects for the affiliation to both political parties here considered. Columns (2) (4) and (6) add a series of covariates.

All columns show that crossing the threshold doesn't imply any change in political participation. The relation between voting registration is actually negative. This lead to the conclusion that college and higher education in general do not cause higher political participation.

Table 6 confirm the latter. It shows the 2SLS regressions for college and higher education in both measures of participation.

Table 5: Reduced form. Effects on political participation of crossing the cutoff

	Lineal		Poly 3rd		Poly 4th	
Panel A: Registration to Vote						
	(1)	(2)	(3)	(4)	(5)	(6)
$1(T \geq \tau)$	-.005 (.006)	-.007 (.006)	-.005 (.005)	-.007 (.005)	-.003 (.006)	-.005 (.006)
Const.	.209 (.008)***	-.416 (.028)***	.214 (.009)***	-.402 (.017)***	.211 (.016)***	-.406 (.022)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	.002	.014	.029	.042	.029	.042
Panel B: Party Affiliation						
	(1)	(2)	(3)	(4)	(5)	(6)
$1(T \geq \tau)$	.0001 (.0006)	.0001 (.0006)	-.0001 (.0005)	-.0001 (.0005)	.0003 (.0006)	.0003 (.0006)
Const.	.0008 (.0008)	-.012 (.005)**	.001 (.0009)	-.013 (.003)***	-.0006 (.002)	-.015 (.003)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	.00003	.001	.00003	.001	.00004	.001
Covariates	No	Yes	No	Yes	No	Yes

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5, \*: p-value<10%.

Table 6: IV regressions for Voting registration and party Affiliation.

	Lineal		Poly 3rd		Poly 4th	
	Registration to Vote					
	(1)	(2)	(3)	(4)	(5)	(6)
1(College)	-.031 (.032)	-.040 (.032)	-.032 (.029)	-.041 (.029)	-.020 (.035)	-.030 (.035)
Const.	.216 (.014)***	-.420 (.028)***	.222 (.015)***	-.401 (.018)***	.216 (.023)***	-.405 (.022)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	-.002	.008	.026	.039	.028	.04
	(1)	(2)	(3)	(4)	(5)	(6)
1(Higher Educ)	-.048 (.049)	-.061 (.048)	-.046 (.042)	-.058 (.041)	-.029 (.053)	-.045 (.053)
Const.	.234 (.031)***	-.390 (.038)***	.238 (.029)***	-.376 (.030)***	.227 (.041)***	-.385 (.040)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	-.0009	.009	.027	.038	.028	.04
	Party Affiliation					
	(1)	(2)	(3)	(4)	(5)	(6)
1(College)	.0008 (.003)	.0006 (.003)	-.0006 (.003)	-.0008 (.003)	.002 (.003)	.001 (.003)
Const.	.0006 (.001)	-.012 (.005)**	.001 (.001)	-.013 (.003)***	-.0009 (.002)	-.015 (.003)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	.00007	.001	-.00002	.001	-.0002	.001
	(1)	(2)	(3)	(4)	(5)	(6)
1(Higher Educ)	.001 (.005)	.001 (.005)	-.0009 (.004)	-.001 (.004)	.002 (.005)	.002 (.005)
Const.	.0001 (.003)	-.012 (.006)**	.002 (.003)	-.013 (.004)***	-.002 (.004)	-.016 (.005)***
Obs.	79888	79791	235801	235552	235801	235552
$R^2$	-.0002	.0009	-.00003	.001	-.0007	.0006
Covariates	No	Yes	No	Yes	No	Yes

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5, \*: p-value<10%.



## 4.2 Heterogeneity

The literature often indicates that the second most important characteristics influencing political participation (the first being education) are individual's income and sex. In the following tables I explore if these exogenous measures of higher education make any difference for different income groups and sex.

### 4.2.1 Income

First, Panel A on Table 7 shows that the eligibility cutoff implied a significant change in the probability of higher education, and college for all the income quintiles except for the one that was not eligible for loans (the richest quintile, the fifth). Consistently the group that benefits most from the financial programs is the poorest income quintile, where the probability of going to higher education went from 52.4% to 65.9% (a 26% increase), while for the second quintile the relative increase is only 18%. In the case of college the poorest income quintile experienced an increase of 20 percentage points relative to the enrollment rate of 19% for those barely below, implying a relative increase of 104% on the probability of going to college.

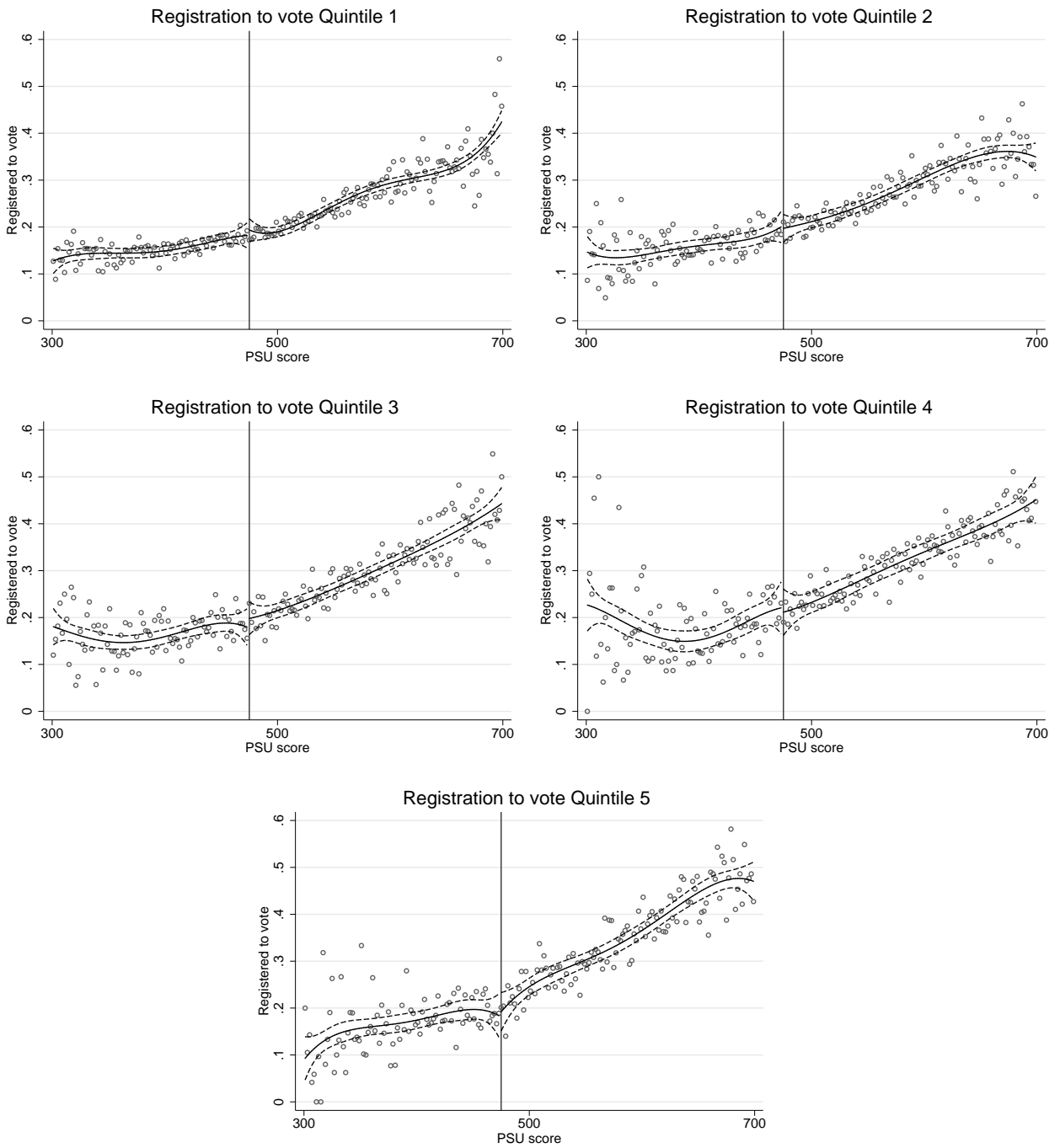
Nevertheless, panel B on Table 7 shows that the exogenous variation in higher education in all its forms did not cause a higher probability of participation for none of the income quintiles.

Table 7: First stages and reduced forms for registration to vote by income quintile.

	Lineal	Pol3	Pol4	Lineal	Pol3	Pol4
	(1)	(2)	(3)	(4)	(5)	(6)
First Stage						
	College			Higher Education		
$1(T \geq \tau) \times q1$	.200 (.008)***	.192 (.007)***	.198 (.008)***	.135 (.010)***	.136 (.008)***	.135 (.010)***
$1(T \geq \tau) \times q2$	.170 (.013)***	.173 (.011)***	.166 (.014)***	.103 (.015)***	.110 (.013)***	.101 (.016)***
$1(T \geq \tau) \times q3$	.165 (.017)***	.154 (.014)***	.162 (.017)***	.099 (.018)***	.114 (.016)***	.120 (.020)***
$1(T \geq \tau) \times q4$	.070 (.019)***	.072 (.016)***	.066 (.020)***	.051 (.021)**	.064 (.018)***	.045 (.022)**
$1(T \geq \tau) \times q5$	.033 (.022)	.005 (.018)	.024 (.022)	.020 (.024)	-.004 (.020)	-.002 (.025)
Obs.	87050	265606	265606	87050	265606	265606
$R^2$	.379	.622	.622	.583	.672	.672
Reduced Form						
	Voting Registration			Party Affiliation		
$1(T \geq \tau) \times q1$	-.008 (.008)	-.008 (.007)	-.006 (.008)	.0002 (.0008)	-.00008 (.0007)	.00004 (.0008)
$1(T \geq \tau) \times q2$	-.002 (.012)	-.001 (.011)	.010 (.013)	-.0003 (.001)	-.0006 (.001)	.0002 (.001)
$1(T \geq \tau) \times q3$	.016 (.015)	.012 (.013)	.003 (.016)	.0009 (.002)	.001 (.001)	.002 (.002)
$1(T \geq \tau) \times q4$	-.025 (.017)	-.022 (.016)	-.021 (.019)	-.0004 (.001)	-.001 (.001)	-.0009 (.002)
$1(T \geq \tau) \times q5$	-.001 (.019)	.018 (.017)	.029 (.020)	-.002 (.002)	-.0005 (.002)	-.0004 (.003)
Obs.	87050	265606	265606	87050	265606	265606
$R^2$	.198	.267	.267	.002	.002	.002

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%.

Figure 5: Reduced Form by income quintile. Registration to vote.



Note: Each dot represents average registration to vote in intervals of 2 points for different income quintiles. These figures consider only students who satisfy all requirements to be eligible for college loans and take the PSU immediately after graduating from high school.

## 4.2.2 Sex

The second more important feature explaining political participation is sex. Table 8 shows the first stages for sexes and, as before, are very strong, especially for college education. The females in the control group (those barely below the cutoff) enrolled on average 20% of the time while those treated with college education (those barely above the cutoff) increase their probability on 15 percentage points (a 75% increase). The same patterns are valid for higher education.

Table 8: First stages and Reduced Forms for registration to vote and party affiliation

	Lineal (1)	Pol3 (2)	Pol4 (3)	Lineal (4)	Pol3 (5)	Pol4 (6)
First Stage						
	College			Higher Education		
$1(T \geq \tau) \times 1(\text{male})$	.151 (.009)***	.147 (.006)***	.145 (.009)***	.097 (.010)***	.093 (.009)***	.092 (.011)***
$1(T \geq \tau) \times 1(\text{female})$	.171 (.008)***	.166 (.007)***	.166 (.008)***	.112 (.009)***	.119 (.008)***	.114 (.009)***
Obs.	87050	265606	265606	87050	265606	265606
$R^2$	.374	.617	.617	.582	.669	.669
Reduced Form						
	Voting Registration			Party Affiliation		
$1(T \geq \tau) \times 1(\text{male})$	-.009 (.008)	-.007 (.007)	-.010 (.009)	.001 (.0009)	.0005 (.0008)	.001 (.001)
$1(T \geq \tau) \times 1(\text{female})$	-.003 (.007)	-.0001 (.006)	.006 (.008)	-.0008 (.0007)	-.0005 (.0006)	-.0004 (.0007)
Obs.	87050	265606	265606	87050	265606	265606
$R^2$	.198	.266	.266	.002	.002	.002

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%.

## 5 Evidence from a Survey

To explore other forms of political participation and to explain the differences between the administrative and survey data (reported between tables 3 and 4) I performed in October of 2012 a web survey. Students that participated in the admission process between 2007 and 2009 were invited by email to answer a web survey. The invitation was sent to the email addresses self-reported by the students when they registered to write the PSU test, when they were in the last year

of high school. The survey was designed for this purpose and it was administered by the Universidad Católica de Concepción, who sent the emails and later merged the information with to administrative data from the PSU process, to enrollment in higher education and to the electoral data.<sup>15,16</sup>

The rate of response was about 5%, lower than the average response rate for online surveys (30%) (Nulty, 2008). There are many reasons that potentially can explain this rate of response. The first, these email addresses were self-reported by students between 2007 and 2009, and they may have not been kept by the students after they entered to study or work. A second reason, it may be that the invitation email went directly to spam folders, because the email address used to send the invitation was not previously known by the students, and contained words such as “invitation”, “survey”, “questionnaire”, “raffle”, “Ipad”, and “tablet”, all of which are considered to raise red flags from email servers.<sup>17</sup> Third, students may follow common recommendation from IT technicians that suggests not to open emails from unknown senders. Students registered their emails and agreed to be contacted for anything related to the PSU process when they registered to take the PSU, but they do not know us before the invitation email.

To increase the response rate I offered a raffle of 3 tablets (2 Ipad and 1 HP tablet) and 5 gift cards (\$20 each). Preliminary inspection of the data indicates that less than 8% of the students actually opened the invitation email, and 0.1% requested to be unsubscribed.

The main concern is that the respondents may not be a representative sample. To show what type of selection is faced by the survey, I perform a RD t-test comparing respondents with the population at the cutoff, i.e. I perform RD regressions of the type of equation (1) to a set of observable characteristics. Table 9 shows this exercise. Column (1) indicates the population levels for the base line characteristics (for students  $\epsilon$  below the cutoff). Column (2) indicates the difference for students that are (barely) above the cutoff. Column (4) shows the levels of survey respondents (below the cutoff). Column (5) shows the difference in levels between the survey respondents above the cutoff. Finally Columns (7) compares levels between the population and the survey.

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<sup>15</sup>This University is part of the Council of Rectors of the Chilean Universities, who managed the PSU test every year and owns the data.

<sup>16</sup>The survey can be found in the appendix

<sup>17</sup>A translation of the invitation appears in the appendix

Table 9: Survey Balance of Covariates

	Population			Survey			Difference	
	Level	Jump	Sd	Level	Jump	Sd	Level	Sd
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income quintile	1.82	0.01	(0.02)	1.87	-0.03	(0.09)	0.04	(0.07)
Self-reported income	1.28	-0.01	(0.01)	1.32	-0.05	(0.04)	0.04	(0.03)
Mother years of Ed.	10.61	0.01	(0.05)	10.76	-0.03	(0.3)	0.15	(0.24)
Father years of Ed.	10.60	-0.02	(0.06)	10.66	0.17	(0.35)	0.06	(0.28)
1(Female)	0.59	0.01	(0.01)	0.64	-0.04	(0.04)	0.06	(0.03)*
High School GPA	55.94	0.05	(0.06)	56.06	0.16	(0.36)	0.12	(0.28)
Public School	0.48	0.01	(0.01)	0.54	-0.05	(0.04)	0.06	(0.03)*
Voucher School	0.51	-0.01	(0.01)	0.44	0.06	(0.04)	-0.07	(0.04)*
Private School	0.01	0.00	(0.002)	0.02	-0.01	(0.01)	0.00	(0.01)
Who Finance Studies	1.90	0.01	(0.02)	1.76	0.13	(0.13)	-0.14	(0.1)
1(Married)	0.01	0.00	(0.002)	0.00	0.02	(0.01)**	-0.01	(0.01)
1(Work)	0.08	0.00	(0.004)	0.07	0.01	(0.02)	-0.01	(0.02)
HH size	4.49	-0.02	(0.03)	4.68	0.03	(0.15)	0.19	(0.12)
Mother in formal work	0.27	0.00	(0.01)	0.32	-0.02	(0.04)	0.04	(0.03)
Father in formal work	0.51	0.01	(0.01)	0.55	-0.06	(0.04)	0.04	(0.03)
Live with parents	1.72	0.00	(0.02)	1.66	0.00	(0.12)	-0.06	(0.09)
Will live out HH	0.23	0.00	(0.01)	0.19	0.02	(0.03)	-0.04	(0.03)
Expect aid to study	0.37	0.00	(0.003)	0.36	0.00	(0.04)	0.00	(0.03)
Both parent live	0.77	0.01	(0.01)	0.77	0.01	(0.03)	0.00	(0.03)

Note: Robust standard errors in parenthesis. \*: p-value<10%, \*\*: p-value<5%

This table shows two things, first, that surveyed students above and below the threshold are comparable in observables, suggesting that both groups can be considered as good counterfactual. Secondly it shows that, around the threshold, survey respondents are almost identical to the population, except for 2 characteristics that are significantly different at the 10% level: Sex and type of high school. The survey is answered by more women and presents more students that graduated from public high schools (and as a consequence less students graduated from voucher high schools). This evidence shows that the surveyed sample is a representative sample of the population of interest.

Table 10 shows that the exogenous change in the college and higher education enrollment is also present in the survey and is almost identical to the changes from the population. Therefore all the evidence from the survey can be associated to an exogenous change in college and higher

education.

Table 10: First Stages for College and Higher Education. Specifications: Lineal (w=50) and polynomial of 4th grade.

	Lineal		Poly 2nd		Poly 3rd		Poly 4th	
Panel A: College								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(T \geq \tau)$	.182 (.035)***	.180 (.037)***	.209 (.026)***	.212 (.028)***	.192 (.033)***	.195 (.035)***	.184 (.040)***	.186 (.042)***
Const.	.212 (.025)***	-.055 (.095)	.223 (.021)***	-.028 (.052)	.214 (.026)***	-.036 (.056)	.210 (.031)***	-.038 (.059)
Obs.	2657	2335	8450	7441	8450	7441	8450	7441
$R^2$	.121	.137	.297	.302	.297	.302	.298	.302
Panel B: Higher Education								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(T \geq \tau)$	.118 (.039)***	.121 (.041)***	.122 (.030)***	.134 (.032)***	.136 (.039)***	.138 (.041)***	.141 (.046)***	.144 (.049)***
Const.	.549 (.031)***	.501 (.093)***	.557 (.027)***	.420 (.054)***	.539 (.034)***	.415 (.058)***	.524 (.040)***	.402 (.063)***
Obs.	2657	2335	8450	7441	8450	7441	8450	7441
$R^2$	.036	.045	.109	.117	.109	.117	.109	.117
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Note: Robust standard errors in parenthesis. \*\*\*: p-value<1%

One potential problem is that the survey is performed in 2012, and asked to recall if someone was register to vote at the end of 2009.<sup>18</sup> However, the 2009 election was the last one when individuals had to be registered before being able to vote, for the following election in 2012, registration was universal and voting voluntary. Therefore the problem of recollection may not be as important. If students registered to vote they did it between 2007 and 2009, and in that period only 2 elections were held: The presidential one of 2009 (that also elected senators and house representatives) and the municipal election of 2008. Therefore they did not have the chance to registered after the election of 2009 and get confused as a consequence.

Finally, I present in Table 11 and Table 12 OLS regressions for different forms of political participation and political knowledge elicited in the survey to compare them with the results using a exogenous source of higher education. The first 3 columns show the regression of the

<sup>18</sup>This is not a problem for political party affiliation, since the information about party affiliation was collected during 2012, and the survey asked current affiliation status.

dependent variable on a dummy for college in Table 11, and a dummy for higher education in Table 12.

Table 11: OLS regressions between different measures of political participation and knowledge and College

Dependent Variable	Scale	No covariates			With covariates		
		(1) Level	(2) College	(3) t-test	(4) Level	(5) College	(6) t-test
Officially Registered to vote	1/0	0.25	0.06	(4.5)***	0.21	0.06	(3.8)***
Self reported registration to vote	1/0	0.26	0.06	(4.3)***	0.28	0.06	(3.6)***
Overreporting	1/0	0.02	0	(0)	0.07	0	(0.3)
Affiliated to a political party	1/0	0.02	0.01	(1.3)	0.03	0.01	(1.7)*
Political Knowledge test	1-14 to 0-1	0.53	0.03	(4.9)***	0.52	0.02	(4)***
Knows ministers and congress	1-9 to 0-1	0.63	0.02	(3.4)***	0.61	0.02	(2.4)**
Knows about electoral system	1-5 to 0-1	0.34	0.03	(5.8)***	0.34	0.03	(5.5)***
Is able to name senator	1/0	0.25	0.07	(5.1)***	0.22	0.08	(5.1)***
Is able to name representative	1/0	0.34	0.07	(4.8)***	0.31	0.06	(4)***
Is able to name Major	1/0	0.85	0.04	(3.5)***	0.73	0.03	(3)***
Likes politics	1-9 to 0-1	0.28	0.04	(5)***	0.35	0.05	(5.3)***
Democracy is the best	1-9 to 0-1	0.6	0.04	(4.9)***	0.53	0.04	(4.1)***
Knows candidates proposals	1-9 to 0-1	0.41	0.06	(6.1)***	0.47	0.06	(6.2)***
Reads politics on newspapers	1-9 to 0-1	0.27	0.04	(5.2)***	0.29	0.04	(4.7)***
Watch politics on TV	1-9 to 0-1	0.38	0.04	(4.8)***	0.36	0.05	(4.9)***
Educated are better rulers	1-9 to 0-1	0.44	0.03	(3.5)***	0.33	0.02	(2.5)**
Income should be more equitable	1-9 to 0-1	0.78	0.01	(1.6)	0.82	0.01	(2)**
Taxes should be raised for equity	1-9 to 0-1	0.39	0.03	(2.9)***	0.48	0.02	(2.5)**
More State-own firms	1-9 to 0-1	0.55	0.03	(3.4)***	0.58	0.03	(3.2)***
Competition is good	1-9 to 0-1	0.64	-0.01	(-0.9)	0.64	-0.01	(-0.9)
Women are better rulers	1-9 to 0-1	0.49	-0.01	(-0.9)	0.49	0	(-0.4)
Participate in demonstrations	1/0	0.45	0.11	(7.1)***	0.37	0.1	(5.8)***
in marches	1/0	0.38	0.11	(7.6)***	0.3	0.11	(6.6)***
in occupying institutions	1/0	0.25	0.08	(5.5)***	0.02	0.06	(4)***
in Cacerolazo	1/0	0.13	0.04	(3.6)***	0.15	0.04	(3.1)***
in street protests	1/0	0.2	0.06	(5.1)***	0.24	0.06	(4.1)***
in political meetings	1/0	0.12	0.09	(7.9)***	0.12	0.09	(6.9)***
Other demonstrations	1/0	0.07	0.02	(2.7)***	0.11	0.02	(2.4)**
Participate in civic organization	1/0	0.13	0.04	(3.6)***	0.06	0.04	(3.1)***
in board of neighbors	1/0	0.02	0.01	(1.5)	0.05	0.01	(1.3)
in Sports club	1/0	0.02	0.01	(2.7)***	0.04	0.02	(2.8)***
in Student unions	1/0	0.03	0.02	(3.2)***	-0.05	0.01	(2)**
in (Worker) Union	1/0	0.01	0	(-0.4)	0.03	0	(0.5)
in Religious Group	1/0	0.04	0.01	(1.2)	-0.02	0	(0.6)
in other	1/0	0.07	0.02	(2.6)**	0.06	0.02	(2.4)**

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%, \*: p-value<10%.



Columns (4) to (6) add to this regression a set of baseline characteristics.<sup>19</sup> The sample is restricted to 80 points around the cutoff to focus in what happen around the cutoff.<sup>20</sup> This table shows that college and higher education is highly correlated with self-reported form of political participation, but also with the official registration and political knowledge that do not suffer from overreporting bias.

College appears to increase 6 percentage points the official registration to vote (about a 25% relative increase) and is not distinguishable from the self-reported registration. Interestingly overreporting appears to be balanced across educational levels.

Additionally, college appear to increase knowledge about politics (for example, college students are able to name a senator - in the student's own district - 7 percentage points more frequently); appear to induce better attitudes towards democracy (college students agreed that democracy is the best political system 4 percentage points more often); appear to increase the amount of information held by students (they agree on knowing candidates proposals, 4 percentage points higher); increase the likelihood of participation in political demonstrations (11 percentage points more often) and in civic organizations (4 percentage points more often or 35% relatively more likely than non-college students). In conclusion, college education appears to induce all form of political participation and also increase the information set, changing also the attitudes toward a democratic system and to more redistribution.

The same happened in Table 12 for higher education, but less pronounced.

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<sup>19</sup>The covariates are PSU score, Income quintile, self-reported income category, sex, dummies for type of school (public, voucher and private), high school GPA, household size, if worked previously to take the PSU, and father and mother education.

<sup>20</sup>The tables with the whole sample are shown in the appendix, and show an even greater correlation.

Table 12: OLS regressions between different measures of political participation and knowledge and Higher Education

Dependent Variable	Scale	No covariates			With covariates		
		(1) Level	(2) College	(3) t-test	(4) Level	(5) College	(6) t-test
Officially Registered to vote	1/0	0.26	0.03	(2)**	0.19	0.03	(1.9)*
Self reported registration to vote	1/0	0.27	0.02	(1.5)	0.27	0.02	(1.3)
Overreporting	1/0	0.02	0	(-0.6)	0.07	-0.01	(-1.1)
Affiliated to a political party	1/0	0.02	0	(0.9)	0.03	0.01	(1.1)
Political Knowledge test	1-14 to 0-1	0.54	0.01	(1.8)*	0.51	0.01	(0.9)
Knows ministers and congress	1-9 to 0-1	0.64	0	(0.7)	0.61	0	(0)
Knows about electoral system	1-5 to 0-1	0.34	0.02	(3.2)***	0.33	0.01	(2.3)**
Is able to name senator	1/0	0.26	0.04	(2.5)**	0.19	0.03	(2.2)**
Is able to name representative	1/0	0.35	0.03	(1.8)*	0.3	0.01	(0.6)
Is able to name Major	1/0	0.85	0.02	(2.1)**	0.72	0.02	(1.3)
Likes politics	1-9 to 0-1	0.29	0.02	(2.1)**	0.34	0.02	(1.7)*
Democracy is the best	1-9 to 0-1	0.61	0.02	(2.4)**	0.51	0.02	(2)**
Knows candidates proposals	1-9 to 0-1	0.41	0.03	(3.3)***	0.45	0.04	(3.5)***
Reads politics on newspapers	1-9 to 0-1	0.27	0.03	(3.2)***	0.27	0.03	(2.9)***
Watch politics on TV	1-9 to 0-1	0.39	0.02	(2.5)**	0.34	0.03	(2.7)***
Educated are better rulers	1-9 to 0-1	0.44	0.02	(2)*	0.32	0.02	(1.6)
Income should be more equitable	1-9 to 0-1	0.79	0	(0.1)	0.82	0	(0.2)
Taxes should be raised for equity	1-9 to 0-1	0.38	0.03	(3)***	0.47	0.02	(2.1)**
More State-own firms	1-9 to 0-1	0.56	0.01	(1.6)	0.58	0.01	(1)
Competition is good	1-9 to 0-1	0.62	0.02	(2.2)**	0.64	0.02	(1.9)*
Women are better rulers	1-9 to 0-1	0.5	-0.01	(-0.8)	0.49	0	(0.2)
Participate in demonstrations	1/0	0.48	0.03	(2.1)**	0.34	0.02	(1.2)
in marches	1/0	0.4	0.04	(2.5)**	0.28	0.03	(1.6)
in occupying institutions	1/0	0.27	0.02	(1.2)	0.01	0.01	(0.4)
in Cacerolazo	1/0	0.16	-0.01	(-0.5)	0.14	0	(-0.2)
in street protests	1/0	0.21	0.02	(1.7)*	0.23	0.02	(1.4)
in political meetings	1/0	0.14	0.04	(3.3)***	0.09	0.03	(2.5)**
Other demonstrations	1/0	0.07	0.01	(1.7)*	0.1	0.01	(1.3)
Participate in civic organization	1/0	0.14	0.02	(1.5)	0.05	0.01	(1)
in board of neighbors	1/0	0.02	0.01	(1.3)	0.04	0.01	(1.1)
in Sports club	1/0	0.02	0.01	(1.8)*	0.03	0.01	(1.8)*
in Student unions	1/0	0.03	0.01	(1.8)*	-0.05	0.01	(1)
in (Worker) Union	1/0	0.01	0	(1)	0.03	0	(0.8)
in Religious Group	1/0	0.05	0	(-0.2)	-0.02	0	(-0.3)
in other	1/0	0.07	0.01	(1.1)	0.05	0.01	(1)

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5, \*: p-value<10%.

## 5.1 Estimates Using the Survey Results

Table 13 shows the main outcomes of the survey with respect to the cutoff, the reduced form regression. Columns (1) and (2) indicate that among surveyed there is no change in political participation when the administrative data is used, confirming the results shown previously. In this case both specifications show a positive but not statistically significant relationship. Columns (3) and (4) show the self-reported change in registration to vote. The self-reported registration to vote is positive for both specifications and is statistically different from zero for the linear regression. This relationship is about 3% higher than the actual one which indicates that some individuals misreport their participation.

Table 13: Reduced forms. Specifications: Lineal ( $w=80$ ) and polynomial of 4th grade.

	Official		Self-Reported		Overreporting		Misreporting	
	Registration		Registration					
	Lin	Pol3	Lin	Pol3	Lin	Pol3	Lin	Pol3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(T \geq \tau)$	.018 (.028)	.006 (.034)	.047 (.028)*	.034 (.034)	.024 (.008)***	.020 (.010)**	.016 (.011)	.011 (.014)
Const.	.251 (.021)***	.258 (.028)***	.245 (.021)***	.250 (.028)***	.008 (.005)	.009 (.007)	.029 (.009)***	.031 (.012)***
$T - \tau$	.0005 (.0005)	.001 (.002)	.00004 (.0005)	.001 (.002)	-.0004 (.0002)**	.00007 (.0006)	-.0003 (.0002)	.0003 (.0008)
$(T - \tau) \cdot 1(T \geq \tau)$	.00008 (.0006)	-.0008 (.002)	.0002 (.0007)	-.0008 (.002)	.00006 (.0002)	-.0004 (.0006)	-.00006 (.0003)	-.0006 (.0008)
$(T - \tau)^2$		.00002 (.00002)		.00003 (.00002)		1.00e-05 (1.00e-05)		1.00e-05 (1.00e-05)
$(T - \tau)^2 \cdot 1(T \geq \tau)$		-1.00e-05 (.00002)		-.00002 (.00002)		-1.00e-05 (1.00e-05)		-1.00e-05 (1.00e-05)
$(T - \tau)^3$		7.25e-08 (7.51e-08)		1.44e-07 (8.23e-08)*		7.74e-08 (4.11e-08)*		6.94e-08 (4.48e-08)
$(T - \tau)^3 \cdot 1(T \geq \tau)$		-9.04e-08 (7.59e-08)		-1.63e-07 (8.30e-08)**		-7.91e-08 (4.12e-08)*		-7.09e-08 (4.49e-08)
Obs.	4340	8450	4323	8422	4323	8422	4340	8450
$R^2$	.005	.028	.004	.023	.005	.012	.003	.007

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5%, \*: p-value<10%.

In this case we can compare the self-reported with the true registration to vote. Columns (5) and (6) show that students crossing the threshold overreport their registration to vote significantly.

Students that barely became eligible for loans overreport their registration 2 percentage points more frequently than those barely below the cutoff. Students that are barely below have an the average rate of overreporting of zero (represented by the constant term).

Whereas, the last two columns show that underreporting is also present in the survey, and there is no difference between the students around the threshold, both groups misreport about 3% of the cases.

These results may benefit from the fact that the 2009 election was a presidential one. Górecki (2011), and Karp and Brokington (2005) suggest that overreporting depends on the importance of the election, and individuals tend to increase their overreporting in presidential ones. Unfortunately, I cannot test if overreporting is lower in a non-presidential election, as mentioned before this election was the last that requires registration to vote, and therefore the chance to use the same strategy was eliminated.

Table 14 shows the effects on these variables using the cutoff as instrument for college enrollment. Again columns (1) and (2) show that college education does not imply a higher registration to vote, and columns (3) and (4) show that self-reported registration is higher than the official record (and positive and significant for the linear case). Columns (5) and (6) shows that the probability of overreporting increases between 10 and 12 percentage points for students enrolled in college, but there is no misreporting related to college education (columns (7) and (8)).

Table 14: IV estimations using college as instrument. Specifications: Lineal (w=80) and polynomial of 4th grade.

	Official		Self-Reported		Overreporting		Misreporting	
	Registration		Registration					
	Lin	Pol3	Lin	Pol3	Lin	Pol3	Lin	Pol3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
College	.090 (.135)	.032 (.179)	.227 (.138)*	.176 (.182)	.117 (.042)***	.103 (.054)*	.076 (.056)	.056 (.076)
Const.	.231 (.048)***	.251 (.064)***	.196 (.049)***	.212 (.065)***	-.018 (.014)	-.013 (.018)	.012 (.020)	.019 (.027)
$T - \tau$	.0004 (.0007)	.001 (.002)	-.0003 (.0007)	.0009 (.002)	-.0006 (.0002)***	-.00005 (.0007)	-.0004 (.0003)	.0002 (.0009)
$(T - \tau) \cdot 1(T \geq \tau)$	-.0002 (.0007)	-.0009 (.001)	-.0004 (.0007)	-.001 (.002)	-.0003 (.0002)	-.0008 (.0006)	-.0003 (.0003)	-.0008 (.0007)
$(T - \tau)^2$		.00002 (.00002)		.00003 (.00002)		.00002 (1.00e-05)		1.00e-05 (1.00e-05)
$(T - \tau)^2 \cdot 1(T \geq \tau)$		-1.00e-05 (.00002)		-.00002 (.00003)		-1.00e-05 (1.00e-05)		-1.00e-05 (1.00e-05)
$(T - \tau)^3$		7.40e-08 (7.13e-08)		1.50e-07 (8.18e-08)*		8.13e-08 (4.23e-08)*		7.20e-08 (4.38e-08)
$(T - \tau)^3 \cdot 1(T \geq \tau)$		-9.25e-08 (7.12e-08)		-1.73e-07 (8.15e-08)**		-8.50e-08 (4.20e-08)**		-7.45e-08 (4.35e-08)*
Obs.	4340	8450	4323	8422	4323	8422	4340	8450
$F$ statistic	7.371	37.781	5.312	30.286	5.317	5.04	3.582	4.316

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%, \*\*: p-value<5, \*: p-value<10%.

Table 15 shows the results when the cutoff is used as an instrument for any type of higher education. The results have the same pattern shown in the previous table. Now self-reported registration is not significantly different for students that enrolled in higher education for both specification, and receiving higher education increases the probability of overreporting between 15 and 19 percentage points.

This findings confirms the causal relationship suggested by Silver, Anderson and Abramson (1986) that indicates that the most inclined to overreport are the highly educated. Additionally, this evidence is consistent with the literature findings that indicate that overreporting do not affect the conclusions of political participation. Overreporting is very low and therefore do not affect the conclusions relative to voting registration. However the low rate of overreporting may be a consequence of the type of survey, as in web surveys there is no person acting as surveyor,

which reduces the embarrassment of answering a social undesirable behavior (Silver, Abramson and Anderson, 1986). Nevertheless, it shows that overreporting is not randomly distributed in the population, consistent with the findings of Bernstein, Chadha, and Montjoy (2001), indicating that using reported vote, potentially distorts the relative effects of some variables on voting, inducing to mistakenly support some hypothesis.

Table 15: IV estimations using higher education as instrument. Specifications: Lineal (w=80) and polynomial of 4th grade.

	Official		Self-Reported					
	Registration		Registration		Overreporting		Misreporting	
	Lin	Pol3	Lin	Pol3	Lin	Pol3	Lin	Pol3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Higher Education	.149 (.228)	.045 (.253)	.382 (.249)	.254 (.272)	.196 (.084)**	.149 (.087)*	.125 (.099)	.078 (.110)
Const.	.168 (.144)	.234 (.161)	.033 (.157)	.112 (.173)	-.101 (.052)*	-.072 (.054)	-.041 (.062)	-.011 (.070)
$T - \tau$	.0005 (.0006)	.001 (.001)	-.0002 (.0007)	.001 (.002)	-.0005 (.0003)**	.0002 (.0007)	-.0004 (.0003)	.0003 (.0008)
$(T - \tau) \cdot 1(T \geq \tau)$	-.0001 (.0007)	-.0009 (.001)	-.0003 (.0007)	-.001 (.002)	-.0002 (.0003)	-.0008 (.0007)	-.0002 (.0003)	-.0008 (.0007)
$(T - \tau)^2$		.00002 (.00002)		.00003 (.00002)		.00002 (1.00e-05)		.00002 (1.00e-05)
$(T - \tau)^2 \cdot 1(T \geq \tau)$		-1.00e-05 (.00002)		-.00003 (.00002)		-.00002 (1.00e-05)		-1.00e-05 (1.00e-05)
$(T - \tau)^3$		7.70e-08 (6.62e-08)		1.66e-07 (8.32e-08)**		9.03e-08 (4.44e-08)**		7.71e-08 (4.23e-08)*
$(T - \tau)^3 \cdot 1(T \geq \tau)$		-9.50e-08 (6.84e-08)		-1.86e-07 (8.48e-08)**		-9.25e-08 (4.46e-08)**		-7.88e-08 (4.27e-08)*
Obs.	4340	8450	4323	8422	4323	8422	4340	8450
F statistic	7.235	37.574	4.658	28.361	4.239	4.656	3.375	4.25

Note: Robust standard error in parenthesis. \*\*: p-value<5, \*: p-value<10%.

Finally table 16 shows that there is no effect of education on political knowledge (the score in 14 question about the electoral system and people in government and congress, see appendix), and attitudes (How much do you agree in the statement “*I like politics*”, and “*democracy is the best political system*”), on information about candidates proposals and others forms of political participation, (demonstrations, such as protests, occupation of buildings, political meetings, etc., and participation on civic organizations, such as sport clubs, unions, religious groups, etc.). The

Table 16: Reduced Forms for other forms of participation, attitudes and political knowledge

Linear specification						
	Political knowledge	Like politics	informed proposals	Democracy is best	Participate demonstrations	Participate organization
	(1)	(2)	(3)	(4)	(5)	(6)
$1(T \geq \tau)$	.013 (.012)	.016 (.017)	.022 (.019)	.008 (.018)	.031 (.032)	-.031 (.023)
Const.	.522 (.009)***	.262 (.014)***	.410 (.015)***	.612 (.014)***	.458 (.025)***	.173 (.018)***
Obs.	4340	4325	4326	4307	4317	4317
$R^2$	.006	.009	.002	.013	.015	.002
3rd order polynomial specification						
	Political knowledge	Like politics	informed proposals	Democracy is best	Participate demonstrations	Participate organization
	(1)	(2)	(3)	(4)	(5)	(6)
$1(T \geq \tau)$	.014 (.014)	.026 (.021)	.014 (.024)	.025 (.022)	.041 (.039)	-.042 (.028)
Const.	.523 (.012)***	.258 (.018)***	.419 (.020)***	.596 (.019)***	.456 (.033)***	.189 (.024)***
Obs.	8450	8420	8420	8389	8410	8402
$R^2$	.026	.031	.002	.016	.038	.001

Note: Robust standard error in parenthesis. \*\*\*: p-value<1%.

upper panel of Table 16 uses a linear specification in a windows of 80 points and the lower panel a 3rd order polynomial spline for the whole sample. I don't show that 2SLS regressions since the reduced form is zero.

## 6 Conclusion

The relationship between education and political participation has been broadly explored in the literature, but only few papers have examined the causal channels. To deal with endogeneity I used a regressions discontinuity design induced by the eligibility criteria of two higher education loans in Chile. The two programs require that students score above a cutoff in the national admission test for college, PSU, which is taken by the majority of high school graduates each year. Students that do not meet this requirement can only access to loans in technical institutions.

The eligibility criteria induce a jump in the enrollment rate of college and higher education in

general (Solis, 2012). This exogenous source of higher education was merged with administrative records of voting registration and political party affiliation to have measures of participation that do not suffer from overreporting and response bias.

The estimation indicates that there is not causal effect of the two exogenous measures of higher education on the two political participation measures. Moreover, I find that this result is persistent to any subsample, grouped by income level (using tax authority classification), by sex, or other background characteristic.

To explore more forms of political participation, political knowledge, attitudes, and difference in the information sets, I collected survey data for a representative sample from the population mentioned before. Using the same exogenous variation on higher education, I found that the two measures of higher education do not cause any of the measure elicited in the survey: higher political participation (measured as participation on demonstrations and civic organizations), higher political knowledge, better attitudes towards democracy, and self-reported measures of information.

However, I found that college and higher education do cause overreporting on registration to vote confirming previous hypothesis that indicate that educated individuals feel higher pressure to participate and to engage in social desirable behavior (Silver, Anderson, and Abramson (1986), and Bernstein, Chadha and Montjoy (2001), and Funk (2010)). This result shows that using self-reported vote data, potentially distorts the relative effects of some variables on voting, inducing to mistakenly support some hypothesis.

The conclusion is that political participation measured as registration to vote and affiliation to political party is not caused by education.



## 7 References

1. Acemoglu, D., & Angrist, J. D. (2000). How large are human-capital externalities? Evidence from compulsory schooling laws. In B. S. Bernanke & K. Rogoff (Eds.), *NBER macroeconomics annual 2000* (pp. 9–59). Cambridge, MA: MIT Press.
2. Acemoglu, D., Johnson, S., Robinson, J. A. and Yared, P., 2005. From education to democracy? *American Economic Review Papers and Proceedings* 95, 44–49.
3. Angrist, J. D. (1990). Lifetime earnings and the Vietnam era draft lottery: Evidence from social security administrative records. *The American Economic Review*, 80(3), 313–336.
4. Angrist, J. D., & Krueger, A. B. (1992). Estimating the payoff to schooling using the Vietnam-era draft lottery. NBER Working Paper Series, Working Paper No. 4067.
5. Barro, Robert J. "The Determinants of Democracy." *Journal of Political Economy*, 1999, 107(S6), pp. S158-83.
6. Berinsky, A. J. & Lenz G. S. (2010). Education and Political Participation: Exploring the Causal Link. *Political Behavior* Vol. 33, Number 3 (2011), 357-373,
7. Bernstein, R., Chadha, A., Montjoy, R., (2001). Overreporting voting: why it happens and why it matters. *Public Opinion Quarterly* 65 (1), pp 22–44.
8. Black, S., P. Devereux and K. Salvanes, (2008). “Staying In the Classroom and Out of the Maternity Ward? The Effects of Compulsory Schooling Laws on Teenage Births.” *Economic Journal*.
9. Bobba, Matteo & Coviello, Decio, (2007). “Weak instruments and weak identification, in estimating the effects of education, on democracy,” *Economics Letters*, vol. 96(3), 301-306.
10. Borgonovi, Francesca, d’Hombres, Beatrice & Hoskins, Bryony, (2010). “Voter Turnout, Information Acquisition and Education: Evidence from 15 European Countries,” *The B.E. Journal of Economic Analysis & Policy*, vol. 10(1), (Contributions), Article 90.
11. Brody, R. (1978). The puzzle of participation in America. In Anthony King (ed.), *The New American Political System*. Washington, DC.: American Enterprise Institute.

12. Campbell, A., Converse, P.E., Stokes, D.E., and Miller, W.E., (1960). *The American Voter*. Wiley, New York.
13. Campante, Filipe R. & Chor, Davin, (2012). “Why Was the Arab World Poised for Revolution? Schooling, Economic Opportunities, and the Arab Spring,” *Journal of Economic Perspectives*, vol. 26(2), 167–88.
14. Castelló-Climent, Amparo, (2008). “On the distribution of education and democracy,” *Journal of Development Economics*, vol. 87(2), pages 179–190.
15. Card, D. (1995). Using geographic variation in college proximity to estimate the return to schooling. In L. N. Christofides, E. K. Grant, & R. Swidinsky (Eds.), *Aspects of labour market behavior: Essays in honour of John Vanderkamp* (pp. 201–222). Toronto: University of Toronto Press.
16. Card, D., & Lemieux, T. (2001). Going to college to avoid the draft: The unintended legacy of the Vietnam war. *AEA Papers and Proceedings*, 91(2), 97–102.
17. Chevalier, Arnaud & Doyle, Orla, (2012). “Schooling and Voter Turnout: Is there an American Exception?,” IZA Discussion Papers 6539, Institute for the Study of Labor (IZA).
18. Dee, T. S. (2004). Are there civic returns to education? *Journal of Public Economics*, 88, 1697–1720.
19. Erikson, R. S. & Stoker, L. (2011). Caught in the Draft: The Effects of Vietnam Draft Lottery Status on Political Attitudes. *American Political Science Review*, Vol. 105, No. 2
20. Friedman, Willa; Kremer, Michael; Miguel, Edward; and Thornton, Rebecca, (2011). “Education As Liberation?” NBER Working Paper 16939
21. Funk, Patricia. (2010). Social Incentives And Voter Turnout: Evidence From The Swiss Mail Ballot System. *Journal of the European Economic Association*, Vol. 8 No. 5 pp. 1077–1103.
22. Galston, W. A. (2001). Political knowledge, political engagement and civic education. *Annual Review of Political Science* 4: 217–234.

23. Glaeser, Edward L.; La Porta, Rafael; Lopez-de- Silanes, Florencio and Shleifer, Andrei, (2004). "Do Institutions Cause Growth?." *Journal of Economic Growth*, 9(3), pp. 271-303.
24. Glaeser, Edward L.; Ponzetto, Giacomo; and Shleifer, Andrei, (2007) "Why Does Democracy Need Education?" *Journal of Economic Growth*.
25. Górecki, Maciej A. (2011). "Electoral Salience and Vote Overreporting: Another Look at the Problem of Validity in Voter Turnout Studies." *International Journal of Public Opinion Research*, 544- 557.
26. Hanushek, E., (2002). Publicly provided education. In: Auerbach, A., Feldstein, M. (Eds.), *The Handbook of Public Economics*. vol. 3. Elsevier, Amsterdam, pp. 2015– 2141.
27. Henderson, J., & Chatfield, S. (2011). Who matches? Propensity scores and bias in the causal effects of education on participation. *Journal of Politics*. Vol. 73, No. 3, pp. 646–658.
28. Highton, Benjamin, (2009). Reconsidering the Effects of Education on Political Participation. *The Journal of Politics*, Vol. 71, No. 4, October 2009, pp. 1564–1576.
29. Hillygus, D. S. (2005). The missing link: Exploring the relationship between higher education and political behavior. *Political Behavior*, 27(1), 25–47.
30. Imbens, Guido W., and Karthik Kalyanaraman, "Optimal Bandwidth Choice for the Regression Discontinuity Estimator," *The Review of Economic Studies*, 79 (2012), 933–959.
31. Kam, C. D., & Palmer, C. L. (2008). Reconsidering the effects of education on political participation. *The Journal of Politics*, 70(3), 612–631.
32. Karp, Jeffery and Brockington, David, (2005). "Social Desirability and Response Validity: A Comparative Analysis in Over-reporting Voter Turnout in Five Countries." *Journal of Politics*. 67. 825-840.
33. Lee, D. S., and Lemieux T., (2010). Regression Discontinuity Designs in Economics. *Journal of Economic Literature*, 48(2), 281–355.
34. Lipset, S., (1959). Some social requisites for democracy: Economic development and political legitimacy. *American Political Science Review*, 53(1), 69-105.

35. Lochner, Lance, (2011). “Non-Production Benefits of Education: Crime, Health, and Good Citizenship,” NBER Working Papers 16722,
36. Luskin, R. C. (1990). “Explaining political sophistication”. *Political Behavior* 12(4): 331–355.
37. Milligan, K., Moretti, E., & Oreopoulos, P. (2004). Does education improve citizenship? Evidence from the United States and the United Kingdom. *Journal of Public Economics*, 88, 1667–1695.
38. Nie, N.H., Junn, J., Stehlik-Barry, K., (1996). Education and Democratic Citizenship in America. University of Chicago Press, Chicago.
39. Nulty, Duncan D., (2010), “The adequacy of response rates to online and paper surveys: what can be done? *Assessment & Evaluation in Higher Education* Vol. 33, No. 3, 301–314.
40. Pelkonen, Panu, (2012). “Length of compulsory education and voter turnout—evidence from a staged reform,” *Public Choice*, Vol. 150(1), 51–75.
41. Putnam, Robert D., (1995), “Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America,” *PS: Political Science & Politics* 28, 664–683.
42. Rosenstone, S., and Hansen, J. M. (1993). Mobilization, Participation, and Democracy in America. New York: Macmillan.
43. Schlozman, K. L. (2002). Citizen participation in America: What do we know? Why do we care? In I. Katznelson & H. V. Milner (Eds.), *Political science: State of the discipline* (pp. 433–461). New York: W.W. Norton and Co
44. Siedler, Thomas , (2010) “Schooling and Citizenship in a Young Democracy: Evidence from Postwar Germany”. *Scandinavian Journal of Economics*, 112(2), 315–338.
45. Silver, Brian D., Anderson, Barbara A., and Abramson Paul R. (1986). “Who overreports voting?” *American Political Science Review* 80(2), 613– 624.
46. Silver, Brian D., Abramson Paul R. and Anderson, Barbara A., (1986). “The Presence of Others and Overreporting of Voting in American National Elections.” *The Public Opinion Quarterly*, Vol. 50(2), 228–239

47. Solis, A., (2012). Credit Access and College Enrollment. Working paper  
(<http://are.berkeley.edu/~alexsolis/CreditAccess&EnrollmentSolis.pdf>)
48. Sondheimer, R. M., & Green, D. P. (2010). Using experiments to estimate the effects of education on voter turnout. *American Journal of Political Science*, 54(1), 174–189.
49. Tenn, Steven, (2007 ). “The Effect of Education on Voter Turnout”. *Political Analysis*, Vol 15, 446–464.
50. Wolfinger, R. E., & Rosenstone, S. J. (1980). Who votes?. New Haven: Yale University Press

## A Appendix: Survey

### A.1 Invitation Email

- **Subject:** Survey Invitation
- **Email Body:**

Dear <*first name*>,

We are a group of researchers from the Catholic University of Concepción, conducting a study on the Chilean political participation and wanted to ask your help answering a brief questionnaire that takes about 15 minutes.

In appreciation for your help, you will participate in the raffle of 2 iPads, 1 tablet HP and 5 gift cards of 10 thousand pesos.

If you have questions do not hesitate to write to [info@encuestapsu.cl](mailto:info@encuestapsu.cl) or visit the website [www.encuestapsu.cl](http://www.encuestapsu.cl)

To answer the questionnaire, click on the following link

<*Personalized link*>

(If the link does not load, copy and paste it into the address bar)

Thank you and good luck

The researchers

*PS: You are contacted to this email because you registered it in the PSU process of the year 200X*

*If you do not want to receive this type of emails, simply reply an email with the word “unsubscribe” in the subject. Sorry for the inconvenience.*

## A.2 Political Participation Survey

### Page I. Participation in elections

- **1A.** Will you vote in the next elections? Yes / No
- **1B.** Were you registered to vote in the presidential election of December 2009? Yes / No

If Yes in 1B:

- **1C.** Did you vote in the first round? Yes / No / do not remember
- **1D.** Did you vote in the second round? Yes / No / do not remember
- **1E.** Did you vote to elect senators? Yes / No / do not remember
- **1F.** Did you vote to elect representatives? Yes / No / do not remember
- **1G.** Did you vote to elect mayor in your town? Yes / No / do not remember

### Page II. Participation in elections

- If Yes in 1C: **2A.** Who did you vote for in the first round?

Jorge Arrate / Marco Enríquez-Ominami / Sebastián Piñera / Eduardo Frei / Null / White / I don't want to answer

- If Yes in 1D: **2B.** Who did you vote for in the second round?

Sebastián Piñera / Eduardo Frei / Null / White / I don't want to answer

- If Yes in 1E, 1F, 1G: **2C.** Do you remember who you voted for ...?

- ... In the election for senator Yes / No
- ... In the election for deputy Yes / No
- ... In the election for mayor Yes / No

- **2D.** About the place you live in. Please Name ...

- ... a Senator from your district \_\_\_\_\_ / not remember
- ... a congressman in your district \_\_\_\_\_ / not remember
- ... the mayor of the municipality where you live \_\_\_\_\_ / not remember

### Page III. Participation

- **3.** Are you enrolled in any political party? Yes / No

If Yes in 3.

- **3B.** Which one?

Party for Democracy / National Renewal / Christian Democracy / Communist Party / Independent Democratic Union / Socialist Party / Humanist Party / Other

- **4.** Have you participated in any political demonstration (march, Building occupation, protest, etc.)? Yes / No

If Yes in 4.

- **4B.** What kind of political demonstration has you participated? (Check all that apply)

a. Marchs / b. Occupying colleges or universities / c. Cacerolazo / d. Street Protest / e. Political meetings / f. Other

- **5.** Do you participate in any civic organization? Yes / No

If Yes in 5.

- **5B.** What kind of organization? (Check all that apply)

a. Board of neighbors / b. Sports club / c. Student Unions / d. (Workers) Union / e. Religious Group / f. Other

**Page IV. Elections**

- **6A.** How many years is there elections to choose ...?
  - **A)** ... President?  
3 years / 4 years / 5 years / 6 years / 7 years / 8 years / Do not know
  - **B)** ... senators in your region?  
3 years / 4 years / 5 years / 6 years / 7 years / 8 years / Do not know
  - **C)** ... deputies in your district?  
3 years / 4 years / 5 years / 6 years / 7 years / 8 years / Do not know
  
- **6B.** How many senators are elected in your senatorial district?  
1 / 2 / 3 / 4 / 5 / Do not know

**Page V. Do you Know (2/2)...**

- **6D.** What position is held by the person in the photograph?
  - a) President of the Chamber of Deputies
  - b) Foreign Minister
  - c) Chairman of the Senate
  - d) Minister of Finance
  - e) None of the above
  
- **6D.** What position is held by the person in the photograph?





- a) President of the Chamber of Deputies
- b) Foreign Minister
- c) Chairman of the Senate
- d) Comptroller of the Republic
- e) None of the above



**Page VI. Do you Know (2/2)...**

- **7A.** Of the following people. Who are currently ministers in the government? (Check all that are correct)

Carlos Larrain Peña / Alfredo Moreno Charme / Manuela De la Barra Hoffman / Cristián Larroulet Vignau / Andres Velasco Brañes / Harald Beyer Burgos / Felipe Bulnes Serrano / Joaquín Lavín Infante

- **7B.** On a scale of 1 to 9, please indicate how much do you agree with the following statements (1 = NEVER - 9 =ALWAYS)

- I like to talk about politics with my friends: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- Vote or not, I'm always informed on candidates' proposals: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- I follow politics reading the newspaper: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- I follow politics watching the news on TV: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9

**Page VII. Elections**

- **8.** On a scale of 1 to 9, indicate how much do you agree with the following statements: (1 = Strongly Disagree - 9 =Strongly Agree)

- Democracy is the best system of government : 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- In general, Better educated people are better rulers: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- People's income should be more equitable: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- Taxes should be raised to improve the country's income distribution: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- The number of State-own firms should be increased: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9

- Competition is good, stimulates effort and new ideas: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9
- In general, women are better leaders than men: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9

*[Here questions no related with political participation survey were ommitted]*

**Page VIII. Study and work**

- **17.** Have you enrolled in a career in higher education? Yes / No

If No in 17:

- **17A.** Why Not?

a. I don't care studying / b. I didn't reach the PSU score for the career I wanted / c. I'll prepared to give back the PSU / d. I don't have the financial means / e. I needed to work / f. Another reason

If Yes in 17:

- **17A.** What Program did you enrolled? (If you have enrolled several times, name the most recent)

Type of institution: \_\_\_\_\_ / Institution Name: \_\_\_\_\_ / Program Name: \_\_\_\_\_ / If your career is not on the list, please click here

- **17B.** Did you graduated from that program? Yes / No

\* If No in 17B: **17C.** Why didn't you graduate?

a. I'm still studying / b. I changed program / c. I failed / d. I Freeze studies / e. I didn't like it / f. I had to leave due to financial problems / g. Another reason

\* If Yes in 17B: **17C.** What year did you graduated on that program? 2008 2009 2010 2011 2012

**Page XII. Study and work**

- **18.** Did you work while studying? Yes / No

If Yes in 18:

- **18A.** How much did you earn monthly (approximate)?

a. 0 to 50 000 pesos / b. Between 50 000 and 100 000 / c. Between 100 000 and 200 000 / d. Between 200 000 and 300 000 / e. More than 300 000

- **18B.** How many months did you earned the previous amount? \_\_\_\_\_

- **18C.** What motivates (motivated) you to work while studying?

a. Meeting the needs of my family / b. To help with the Household expenses / c. To pay fees and tuition / d. To pay other expenses associated with the studies (the board, transportation, photocopying, books etc.) / e. For my entertainment / f. To know what is to work / g. Another reason /

**Page XIII. Labor Situation Today (Last Page)**

- **19.** Are you working now? Yes / No

- **19A.** WHAT IS YOUR MONTHLY INCOME TODAY? Monthly Income \$: \_\_\_\_\_  
(Enter only numbers and dots. Example: 600.000)

- If you prefer not to report your income, we offer the following:

a. 0, (I'm still a student) / b. Less than 182 000 (minimum wage) / c. Between 182 000 and 300 000 / d. Between 300 000 and 500 000 / e. Between 500 000 and 700 000 / f. Between 700,000 and 1 million / g. Between 1 million and 1 million 300 thousand / h. More than 1 million 300 thousand

*[end of the survey]*

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